

CLAIMS

1. A semiconductor device comprising:
 - a first conductor including a first terminal surface;
 - 5 a second conductor placed by the first conductor and including a second terminal surface facing a same direction as does the first terminal surface;
 - a third conductor connected with the first conductor;
 - a semiconductor chip including a first surface and
 - 10 a second surface away from the first surface, the first surface being provided with a first electrode electrically connected with the first conductor via the third conductor, the second surface being provided with a second electrode electrically connected directly with
 - 15 the second conductor, the semiconductor chip being bonded to the first conductor and the second conductor via the second surface; and
 - a resin package sealing the first conductor, the second conductor, the third conductor and the
 - 20 semiconductor chip while exposing the first terminal surface and the second terminal surface.

2. The semiconductor device according to Claim 1, wherein the third conductor includes a first portion
- 25 connected with the first electrode and bonded to the first surface, and a second portion generally vertical to the first portion and connected with the first conductor.

3. The semiconductor device according to Claim 2, wherein the first portion of the third conductor entirely covers the first surface of the semiconductor chip.

5 4. A method of making a semiconductor device, using a lead frame including a semiconductor device formation area formed with a first conductor land and a second conductor land, the first conductor land having a first terminal surface, the second conductor land being by the
10 first conductor land and having a second terminal surface facing in a same direction as does the first terminal surface, the method comprising:

a step of placing a semiconductor chip including a first surface formed with a first electrode and a second
15 surface facing away from the first surface and formed with a second electrode, on the first conductor land and the second conductor land, via the second surface;

a step of placing a third conductor so as to contact the first conductor land and the first surface of the
20 semiconductor chip;

a step of electrically connecting between the first conductor land and the third conductor, between the second electrode of the semiconductor chip and the second conductor land, and between the first electrode of the
25 semiconductor chip and the third conductor;

a step of sealing the first conductor, the second conductor, the third conductor and the semiconductor chip with a resin package while exposing the first terminal

surface and the second terminal surface; and

a step of cutting the first conductor land and the second conductor land from the lead frame.

5 5. A semiconductor device comprising:

a first conductor including a first terminal surface;

a second conductor placed by the first conductor and including a second terminal surface facing in a same direction as does the first terminal surface;

10 a third conductor connected with the first conductor;

a semiconductor chip including a first surface and a second surface away from the first surface, the first surface being provided with a first electrode electrically connected with the first conductor via the
15 third conductor, the second surface being provided with a second electrode electrically connected directly with the second conductor, the semiconductor chip being bonded to the first conductor and the second conductor via the second surface; and

20 a resin package sealing the first conductor, the second conductor, the third conductor and the semiconductor chip while exposing the first terminal surface and the second terminal surface;

wherein the first conductor has a first thin portion
25 opposed to the second conductor and receded toward the first terminal surface, and

wherein the second conductor has a second thin portion opposed to the first conductor and receded from the second

terminal surface.

6. The semiconductor device according to Claim 5,
wherein the third conductor includes a first portion
5 connected with the first electrode and bonded to the first
surface, and a second portion generally vertical to the
first portion and connected with the first conductor.

7. The semiconductor device according to Claim 6,
10 wherein the first portion of the third conductor entirely
covers the first surface of the semiconductor chip.

8. A method of making a lead frame from a metal plate
having a first surface, second surface facing away
15 therefrom, and a thickness as between the first surface
and the second surface, the lead frame including a first
conductor land and a second conductor land opposed to each
other at a space, the method comprising:

a step of performing a first etching to a first region
20 in the first surface, to a middle of the thickness; and

a step of performing a second etching to a second
region in the second surface, to a middle of the thickness,
the second region being displaced with respect to the
first region;

25 wherein the first etching and the second etching form
a gap between the first conductor land and the second
conductor land,

the first etching forming a first thin portion

receding from the first surface, on the first conductor land at a region opposed by the second conductor land, and

the second etching forming a second thin portion
5 receding from the second surface, on the second conductor land at a region opposed by the first conductor land.

9. A semiconductor device comprising:

a first conductor including a first portion, a second
10 portion having a first terminal surface, and a third portion connecting the first portion and the second portion;

a second conductor placed by the second portion, including a second terminal surface facing in a same
15 direction as does the first terminal surface;

a semiconductor chip including a first surface and a second surface away from the first surface, the first surface being provided with a first electrode electrically connected with the first portion, the second
20 surface being provided with a second electrode electrically connected with the second conductor, the semiconductor chip being bonded to the second conductor via the second surface; and

a resin package sealing the first conductor, the
25 second conductor and the semiconductor chip while exposing the first terminal surface and the second terminal surface;

wherein the first portion and the third portion share

a bent first border region, the second portion and the third portion sharing a bent second border region,

the third portion is smaller than the first portion in width at the first border region, or the third portion is smaller than the second portion in width at the second border region.

10. The semiconductor device according to Claim 9, wherein the first conductor has a shape of letter J, U or C, enclosing at least part of the semiconductor chip.

11. The semiconductor device according to Claim 9, wherein the first portion of the first conductor entirely covers the first surface of the semiconductor chip and is bonded to the semiconductor chip.

12. A method of making a semiconductor device, using a lead frame including a first region and a second region, the first region being formed with a first conductor land having a first portion, a second portion having a first terminal surface and a third portion connecting the first portion and the second portion, the second region being formed with a second conductor land having a second terminal surface, the method comprising:

a step of folding the first conductor land, at a first border region between the first portion and the third portion and at a second border region between the second portion and the third portion;

a step of placing a semiconductor chip on the first portion of the first conductor land, or on the second conductor land;

5 a step of overlapping the first region and the second region with each other, via the semiconductor chip;

a step of electrically connecting between the first portion of the first conductor land and the semiconductor chip and between the second conductor land and the semiconductor chip;

10 a step of sealing the first conductor, the second conductor and the semiconductor chip with a resin package while exposing the first terminal surface and the second terminal surface; and

15 a step of cutting the first conductor land and the second conductor land from the lead frame;

wherein the third portion is smaller than the first portion in width at the first border region, or the third portion is smaller than the second portion in width at the second border region.

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13. The method according to Claim 12, wherein the folding of the first conductor land in the step of folding the first conductor land leaves the second portion to extend from the third portion in a direction away from the first
25 portion.

14. The method according to Claim 12, wherein
the second portion includes a pair of projections each

having the first terminal surface,

the third portion connecting to the second portion at a region between the pair of projections, the second border region being between the region sandwiched by the pair of projections and the third portion,

the width of the third portion at the second border region being smaller than a distance between the pair of projections.

10 15. The method according to Claim 12, wherein

the second border region is formed with a pair of cutouts extending in an opposite direction from the extending direction of the third portion, at an interval corresponding to the width of the third portion,

15 the pair of cutouts being utilized for folding the third portion with respect to the second portion, in the step of folding the first conductor land.

16. The method according to Claim 12, wherein the third portion is thinner than the first portion in the first border region.

17. The method according to Claim 12, wherein the third portion is thinner than the second portion in the second border region.